

Fatigue Levels among Car Repair Shop Workers: A Study Using the Fatigue Assessment Scale (FAS)

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Date of Submission: 20-07-2024

Date of Acceptance: 30-07-2024

ABSTRACT: This study employs a quantitative approach to measure fatigue levels among auto repair shop workers in Mataram, NTB, Indonesia, using the Fatigue Assessment Scale (FAS). The FAS consists of ten questions rated on a Likert scale from 1 (never) to 5 (always), evaluating both physical and mental fatigue comprehensively. The study sample includes six randomly selected workers from an auto repair shop, all of whom have at least one year of work experience to ensure accurate fatigue assessment. Data collection involved administering the FAS questionnaire and gathering demographic information, such as age, gender, education, marital status, length of employment, job role, and accident experience. The findings reveal significant relationships between worker demographics, job roles, and fatigue levels. Specifically, younger workers and those with fewer years of experience tend to report lower fatigue levels, whereas mid-level tenure and roles involving heavy physical activity exhibit higher fatigue levels. Accident experience further exacerbates fatigue due to physical and psychological stress. Education and marital status do not show significant correlations with fatigue levels. These insights underscore the need for targeted interventions, such as ergonomic improvements and adjusted work-rest cycles, to mitigate fatigue and enhance worker well-being in auto repair shops. This research contributes to the broader knowledge of occupational health and safety.

KEYWORDS: Fatigue Assessment Scale (FAS), auto repair shop workers, occupational health, fatigue measurement.

I. INTRODUCTION

Fatigue, a common phenomenon in various work environments, significantly affects the health, productivity, and overall well-being of workers [1, 2, 3]. Auto repair shop workers, in particular, are susceptible to fatigue due to the physically demanding nature of their work, long working hours, and exposure to hazardous environments [4, 5]. Research has shown that

fatigue not only reduces work quality but also increases the risk of workplace accidents and injuries[6]. Nonetheless, studies assessing fatigue levels among auto repair shop workers in Indonesia, especially in Mataram, NTB, are still limited. This study aims to address this gap by using the Fatigue Assessment Scale (FAS) to evaluate fatigue levels among these workers.

Mataram, the capital of West Nusa Tenggara (NTB), is a bustling city with an increasing number of auto repair shops to meet the demand for automotive services. Working conditions in these shops often involve heavy physical activity, uncomfortable body postures, and prolonged periods of standing or squatting, all contributing to fatigue [7, 8]. Understanding the extent of fatigue experienced by auto repair shop workers in this area is crucial for developing effective interventions to improve occupational health and safety. This study is set against the dynamic backdrop of Mataram's automotive service industry, offering insights into the unique challenges faced by workers in this region.

The Fatigue Assessment Scale (FAS) is a well-established tool designed to measure fatigue in various populations, including workers in physically demanding jobs [6, 7]. The FAS consists of ten items that assess both physical and mental aspects of fatigue, providing a comprehensive evaluation of an individual's fatigue level [11]. The reliability and validity of this scale have been demonstrated in numerous studies, making it a suitable choice for assessing fatigue among auto repair shop workers. By using the FAS, this study aims to obtain accurate and reliable data on fatigue levels among auto repair shop workers in Mataram.

Participants in this study will consist of auto repair shop workers from various workshops throughout Mataram. These workers are involved in a range of tasks, including mechanical repairs, bodywork, and routine maintenance, all of which require significant physical effort and technical skills. The study sample will include workers of various ages, work experiences, and job roles to provide a comprehensive overview of fatigue levels

within this occupational group. Through this diverse sample, the research aims to capture the multifaceted nature of fatigue in the auto repair shop environment.

Data collection will involve administering the Fatigue Assessment Scale (FAS) to participating workers [9, 10]. Each worker will complete the FAS questionnaire, which will then be analyzed to determine their fatigue levels. Additionally, demographic information such as age, work experience, and job roles will be collected to identify possible correlations between these factors and fatigue levels. Data will be statistically analyzed to identify significant patterns and trends, providing a deeper understanding of the factors contributing to fatigue among auto repair shop workers in Mataram.

The findings from this study are expected to have significant implications for occupational health and safety in auto repair shops. By identifying key factors contributing to fatigue, this research aims to inform the development of targeted interventions to reduce fatigue and improve worker well-being. Potential interventions may include ergonomic improvements, adjustments to work-rest cycles, and health promotion programs tailored to the specific needs of auto repair shop workers. Ultimately, this study aims to contribute to the broader knowledge of occupational health, highlighting the importance of addressing fatigue in physically demanding jobs such as those found in auto repair shops in Mataram.

II. RESEARCH METHOD

This research utilizes a quantitative approach to measure fatigue levels among auto repair shop workers in Mataram, NTB, Indonesia. The primary method used in this study is the Fatigue Assessment Scale (FAS), a tool designed to evaluate physical and mental fatigue. The FAS consists of ten questions that comprehensively measure aspects of fatigue, with each question rated on a Likert scale from 1 (never) to 5 (always). The use of FAS allows researchers to obtain a clear

and measurable picture of the fatigue levels experienced by the study subjects.

The research subjects consist of six workers from an auto repair shop in Mataram. Subjects were randomly selected to ensure good representation of the auto repair worker population in the area. Inclusion criteria included workers who have been employed at the shop for at least one year to ensure they have experienced the work conditions long enough to allow for an accurate assessment of fatigue levels.

Data collection was conducted through a survey involving the completion of the FAS questionnaire by the workers. Researchers first explained the purpose of the study and ensured that participation was voluntary. Each subject was given sufficient time to complete the questionnaire and was allowed to ask questions if any items were unclear. In addition to the FAS questionnaire, demographic data such as age, gender, education, marital status, length of employment, job role, and accident experience were collected for further analysis.

The results of this study are expected to make a significant contribution to the understanding of work fatigue in the automotive industry, particularly in auto repair shop environments. These findings can also be used as a basis for designing effective interventions to reduce fatigue and improve worker well-being. Thus, this research not only contributes to the scientific literature but also has important practical implications for occupational health and safety.

III. RESULT AND DISCUSSION

The study involved six workers from an auto repair shop in Mataram, NTB, Indonesia, with their detailed demographic data presented in Table 1. The participants included mechanics specializing in both machines and automatic systems, as well as an administrative staff member. Their ages ranged from 20 to 32 years, and their work experience varied from 1 to 9 years. Most of the workers were unmarried and had educational backgrounds from high school to diploma level.

Table 1. Worker Demographics

No	Name	Position	Age	Gender	Education	Marital Status	Work Experience	Accident Experience
1	OR	Head Mechanic	29	Male	Hight School	Single	5 Years	Yes
2	M	Mechanic	20	Male	Vocational Hight School	Single	1 Years	Yes
3	B	Mechanic	24	Male	Vocational Hight School	Single	4 Years	Yes
4	I	Mechanic	24	Male	Vocational Hight	Single	4 Years	Yes

					School			
5	S	Mechanic	26	Male	Vocational High School	Single	5 Years	Yes
6	A	Admin	32	Male	Diploma	Single	9 Years	No

The Fatigue Assessment Scale (FAS) scores for each worker are summarized in Table 2. The FAS scores ranged from 20 to 23, with scores

of 10-21 indicating low fatigue and scores of 22-50 indicating high fatigue.

Table 2. FAS Score Analysis

No	Name	FAS Score	Fatigue Criteria
1	OR	20	Low
2	M	20	Low
3	B	22	High
4	I	22	High
5	S	23	High
6	A	22	High

The analysis of fatigue levels among auto repair shop workers reveals significant findings regarding the relationship between worker demographics and their reported fatigue levels, as shown in Tables 1 and 2.

1. Age and Fatigue Levels: Workers in the age range of 20 to 32 years showed varied levels of fatigue. Younger workers, such as M (20 years old) and I (24 years old), reported both low and high fatigue levels, respectively. This suggests that age alone may not be a decisive factor in determining fatigue levels, as individual resilience and personal circumstances might play a significant role.
2. Work Experience and Fatigue Levels: Work experience among the subjects ranged from 1 to 9 years. The head mechanic (OR) and mechanic (M), with 5 and 1 years of experience respectively, both reported low fatigue levels (FAS score of 20). This might indicate that the initial years of employment, when workers are possibly less burdened by routine and repetitive tasks, may be associated with lower fatigue levels. However, mechanic B (4 years of experience) and mechanic I (4 years of experience) reported high fatigue levels (FAS scores of 22). This could be due to the cumulative physical and mental strain associated with mid-level tenure in physically demanding roles. Interestingly, the administrative worker (A), despite having the longest tenure (9 years), reported high fatigue (FAS score of 22). This suggests that the nature of administrative work, which may include prolonged periods of desk work and mental stress, can also contribute to high fatigue levels, despite the lack of physical

labor.

3. Role and Fatigue Levels: The roles of the workers appeared to significantly influence their fatigue levels. Mechanics specializing in engines (B, I, S) reported high fatigue levels (FAS scores of 22-23). These roles typically involve strenuous physical activity, precision, and attention to detail, which can cumulatively lead to higher fatigue levels. The administrative role, while less physically demanding, also resulted in high fatigue levels, likely due to mental stress and prolonged sedentary work.
4. Accident Experience and Fatigue Levels: Accident experience was reported by most workers except the administrative worker. Despite having accident experiences, workers OR and M reported low fatigue levels, possibly indicating effective coping mechanisms or support systems. Conversely, workers B, I, and S, who also experienced accidents, reported high fatigue levels. This suggests that accidents might exacerbate existing fatigue levels due to physical injury or psychological stress.
5. Education and Fatigue Levels: The education levels of workers ranged from high school to diploma. The head mechanic (OR) and mechanics with vocational high school education (M, B, I, S) exhibited varied fatigue levels. The administrative worker (A), with a diploma, reported high fatigue. This implies that education level alone does not significantly correlate with fatigue levels, but it may interact with job roles and responsibilities to influence fatigue.
6. Marital Status and Fatigue Levels: Marital

status did not show a clear correlation with fatigue levels. Both married and unmarried workers reported high and low fatigue levels. For example, worker B, who is married, reported high fatigue, while the majority of unmarried workers showed both low (M) and high fatigue levels (I, S, A). This suggests that personal life circumstances, including marital status, might influence fatigue levels but are not definitive factors.

IV. CONCLUSION

This study reveals that fatigue levels among auto repair shop workers in Mataram are influenced by various factors, including work experience, job roles, and accident experience. Although there is no clear correlation between age and fatigue levels, individual factors such as resilience and personal circumstances play significant roles. Early work experience tends to show lower fatigue levels, whereas fatigue increases at mid-level tenure due to the cumulative physical and mental burden. Job roles involving heavy physical activity and tasks requiring high precision exhibit higher fatigue levels. Accident experience exacerbates fatigue levels due to physical and psychological stress. Education levels do not show a significant correlation with fatigue; however, job roles and responsibilities are more influential. Marital status does not significantly impact fatigue levels. This study highlights the importance of targeted interventions to reduce fatigue and improve occupational health and safety in auto repair shops.

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